

Remarks

This is in response to the Office Action dated October 5, 2004.

The pending claims were rejected under 35 U.S.C. 102(b) as being anticipated by Jenkins (USP 3985133).

Although Jenkins on its surface does appear to have some similarities with the present invention in that it uses a fall in motor speed to detect an occlusion, in actuality it differs from the present invention in the manner in which it detects the fall in motor speed.

To further elaborate the difference between the claims of the instant application and Jenkins, the claims have been amended to clarify the manner in which the system of the invention detects a fall in speed. In particular, where appropriate, the features of now canceled claims 2 and 3 have been added to independent Claims 1, 9 and 10. As a result, the independent claims all specify that the fall in speed of the motor is detected by timing the intervals between pulses produced at a frequency dependent on the speed of the motor.

The Jenkins arrangement differs from this. The pulses supplied to drive the motor 84 are also supplied to a counter. The counter also receives pulses from a disc 88 mounted on the shaft of the motor and these pulses reset the counter to zero each time. If the motor is stalled such that the disc 88 does not rotate, the drive pulses continue to be supplied to the counter and, because it is not reset to zero, accumulate to a level at which the counter overflows. This produces an output indicating a stalled motor.

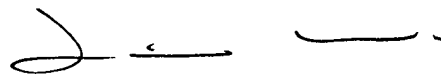
The arrangement of the present invention is, therefore, quite different from that of Jenkins. Jenkins does not time the interval between pulses in the manner now required by the amended claims of the present application.

The arrangement of the present invention has the advantage of not requiring an input of the motor drive signal in the manner that is needed by Jenkins.

It is desirable in modern pumps for them to be able to operate at a wide variety of different speeds in order to dispense different medications in different size syringes and under different protocols. Thus, there can be a wide range of motor speeds employed in a pump. If the arrangement of Jenkins were used in a modern versatile pump of this kind it would mean that the counter would have to be capable of containing the highest drive pulse count in order to accommodate the fastest motor speeds. This would mean that, when used at the lowest drive pulse rate, the counter would take very much longer to reach capacity and provide the occlusion warning. By contrast, apparatus according to the present invention can be readily arranged to have different time limits set for different speeds so that any departure from the normal intervals between pulses can be identified rapidly.

In view of the foregoing, the examiner is respectfully requested to enter this amendment, reconsider the application and pass the same to issue.

Respectfully submitted,



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